PAPIK®

SUSTAINABILITY 11 June 2025 | 5 min read

Passivhaus and sustainability: how to minimise the ecological footprint

The Passivhaus standard and bioclimatic architecture deliver exceptional comfort with minimal consumption. Add natural materials and the result is a home that cares for its occupants and reduces environmental impact.

Anyone considering building a home ends up asking the same question: how to make it as efficient and sustainable as possible. Passivhaus homes and bioclimatic architecture are two clear answers to that concern. They not only achieve exceptional comfort with minimal energy consumption, but also help to reduce the building's ecological footprint significantly across its entire service life.

The starting point is understanding that a well-designed home saves money, improves quality of life and eases the pressure on the planet, and that these three objectives do not compete with one another but reinforce each other.

What is a sustainable home

A sustainable home is one that is built and operated in a way that respects the environment, using natural and renewable materials, optimising resources and minimising environmental impact. The difference from conventional construction is not a matter of finishes, but a way of conceiving the building from the very first sketch.

Compared with a traditional dwelling, a sustainable home has defined characteristics:

- It consumes less energy.
- It reduces CO_2 emissions.
- It is made with healthy, sustainable and recyclable materials.
- It prioritises the comfort and wellbeing of the people who live in it.
- With structural timber, the construction process can absorb more CO_2 than it emits.

Passivhaus: the essence of efficiency and sustainability

The Passivhaus standard is the most demanding in the world for energy efficiency. It rests on five pillars that work together:

- Quality thermal insulation to prevent heat loss.
- Airtightness to eliminate unnecessary air infiltration.
- Mechanical ventilation with heat recovery, which renews the indoor air without energy losses.
- High-performance windows to maintain the ideal temperature.
- Absence of thermal bridges, which removes localised energy losses.

The combination of these elements translates into energy consumption up to 90% lower than that of a traditional house. At PAPIK Group we apply these principles to every Eskimohaus home, where efficiency is not an add-on but the criterion that shapes the whole project.

Bioclimatic architecture: adapting to the natural surroundings

The key to a sustainable home lies in its design. Bioclimatic architecture takes advantage of the climate and the surroundings to reduce the need for heating and cooling while increasing the comfort and wellbeing of the occupants.

Several strategies are used to achieve this, among which a few are especially common:

- Orienting the house towards the south to capture winter sun and warm the home at no cost.
- Fitting solar protection to avoid summer overheating, whether through blinds, porches or the design of the house itself.
- Using materials with high thermal mass to keep the temperature stable.
- Integrating renewable energy systems such as solar panels or aerothermal technology.

When a Passivhaus is also a sustainable home

It is possible to build a home certified to the Passivhaus standard with no commitment to sustainability, using materials with a heavy environmental impact. This is why combining Passivhaus with sustainability creates a synergy that benefits both the occupants and the surroundings.

Key elements

- Ecological, low-impact materials: FSC-certified timber, natural insulation such as cellulose fibre, and toxin-free paints.
- Superior thermal insulation to keep a stable temperature at any time of year.
- Renewable energy: solar panels, aerothermal systems and other efficient technologies.

In practical terms and on real cases, building a very high energy-efficiency home offers a series of advantages over traditional construction that ignores this criterion: annual energy consumption up to 90% lower, thermal comfort with a constant temperature and no need for large climate-control systems, and clean indoor air free of pollutants.

Benefits of living in an ecological and sustainable home

Beyond respect for the environment and the contribution to mitigating climate change, living in a Passivhaus home brings advantages of real value to anyone planning their future dwelling:

- Savings: a reduction of up to 90% in the energy bill.
- Comfort: ideal temperature and humidity throughout the year.
- Health: a healthier indoor environment, free of damp and allergens.
- Energy independence: less reliance on conventional energy sources.

These benefits are consolidated when the energy design is accompanied by a well-resolved thermal envelope and a choice of materials consistent with the project's objectives.

Passivhaus and sustainability: a commitment to the future

Building a home is no ordinary decision. For anyone seeking to live sustainably, healthily and efficiently, the Passivhaus standard offers a solid, verifiable framework. At PAPIK Group we build efficient homes with certified timber and natural materials, with the aim of creating comfortable and healthy dwellings. Building sustainably is no longer a promise for the future, but a practice of the present.

> A truly sustainable home is measured not only by what it saves on bills, but by what it gives back to the people who live in it and the surroundings that host it.